4. ENVIRONMENTAL FRAMEWORK

4.1 INTRODUCTION

This Chapter, newly drafted and compiled for the *2001 Plan Update*, brings together various environmentally related sections from the *1996 Plan* and adds an Environmental Quality Management section.

The Land Capability Analysis section (Section 4.2) has been updated to explain the process utilized in gathering and mapping the data layers and to reflect its application in the development of the *Rural Service Area Land Management Plan*.

The *Greenspace Plan* section has been updated to reflect implementation that has occurred since the *Plan* was written and to reflect the *Greenway Master Plan* effort that will be adopted as an amendment to this *Plan Update* in 2002. A summary of the draft *Greenway Master Plan* is included in Section 4.3.

Section 4.4 is new to this *Plan Update* and includes discussion of conservation planning and environmental smart growth policies and practices, as well as incorporating summaries of related environmental plans. The environmental plans summarized and incorporated by reference in this Chapter include the *Royal Spring Wellhead Protection Plan*; the *Floodplain Management Plan*; and the *Air Quality Plan.* This section also includes a description of the recently implemented Urban Forestry Program.

The interrelationship of the environment to land use planning is a critical component to wise long-range growth management and development of a community. Protection of the valued agricultural resources of Fayette County has long been sustained by the local planning process and its Urban Service Area concept and, more recently, the *Rural Service Area Land Management Plan*. The agricultural nature of the County has lent itself to being aware of this important cultural and economic asset. As Fayette County continues to grow and prosper, the community has become more aware of the need to protect other environmental resources and environmentally sensitive areas as well. Section 3.5 of the Data Inventory and Analysis Chapter (Environmental Conditions Analysis/Assessment) and this new Chapter provide a framework for incorporating this important aspect of the community into the planning decision making process.

4.2 LAND CAPABILITY ANALYSIS AND MAP ELEMENT

During the *1996 Comprehensive Plan* development process, and while decisions related to the 1996 Expansion Areas were being made, it was determined that there was a need for a complete inventory and analysis of the undeveloped rural lands remaining within Fayette County. This inventory was proposed to document the natural features and characteristics of the rural lands and to result in an analysis of the capability of the various landforms to sustain existing and future urban and rural activities and growth pressures. This "Land Capability Analysis" process was completed for the entire Rural Service Area, with an eye toward future policy determinations related to preservation and/or development. All lands were analyzed in terms of a complex interrelationship of physical and social factors. A composite map depicting this information, entitled "General Use Map," was produced as a result of this planning effort.

The first step in this process was the mapping of the basic physical features and conditions of the rural land in a series of consistent maps for comparative references. Aerial photographs, dated March 1996, were utilized to produce these base maps. The information gathered and mapped included soil associations, including prime agricultural lands and soils of secondary importance; topography and steep slopes; environmentally sensitive and geologic hazard areas; roads; land use; tree stands and other major vegetation; historic sites and districts; scenic areas; sewerable areas; existing structures; ownership patterns and existing zoning. The background series of 1" = 600' scale maps and overlays are on file in the Division of Planning.

The second step was to map the area a second time, using a complex set of values recommended by the consulting firm Siemon, Larsen and Marsh, and refined by staff. These values were derived from the *1996 Comprehensive Plan*, from special area plans and studies, and from interviews with key public officials, property owners, and interested citizens. Input was also obtained from the LFUCG Administration, the Urban County Council, the Planning Commission, the Greenspace Commission, and the Expansion Area Master Plan Study Committee. The areas on the composite maps were divided into discrete units, and a mapping key was produced with 123 different units. This mapping key was used as a means to make routinized decisions as to the character of the land through a decision-tree process. Additional information regarding this key and its application can be found in the *Tentative Draft Rural Landscape Management Plan*, October 21, 1996, prepared by Siemon, Larsen and Marsh.

The third step in the process involved the translation of these land characteristics and land management units into a geographic information system (GIS), more suitable for future analyses. The result of this effort is the previously mentioned "General Use Map," which includes a series of additional "layers" of information. The development of this database of information and the General Use Map provided the underlying basis upon which the policies of the *Rural Service Area Land Management Plan* (adopted April, 1999) were developed. The continued utilization of this map will be significant to the ongoing long-range planning process of evaluating and planning land use change and development.

4.2.1 Current Land Character

The land use categories developed for the General Use Map include the following:

Urban Service Area

The adopted area of existing and future urban development.

Core Equine Agricultural Land (CEAL)

Prime agricultural lands with modest slopes, mature trees and high quality and quantity of water and a high improvement-to-land value-ratio.

Prime Agricultural Lands (PAL)

Land suitable for agricultural purposes and comprised of at least 50 percent prime soils or 75 percent prime and secondary soils.

Public Land (PL)

Land owned by a public entity or lands accessible to the public, which will remain in public use in the foreseeable future.

Non-Rural Developed Land (NRDL)

Land that has been improved for non-rural use, including those areas designated for commercial development or rural subdivisions with lot sizes less than ten acres; includes rural settlements and Rural Activity Centers (except where designated as public land).

Rural Developed Land (RDL)

Land that has been improved for rural uses; but the primary purpose is not agricultural in nature, including rural residential lot sizes greater than 10 acres.

Agricultural Land (AL)

Land in the Rural Service Area not placed in any of the other categories.

Historic Landmark/Natural Area (HLN)

Locally designated historic landmarks, as specified in Article 13 of the *Lexington-Fayette Urban County Zoning Ordinance*, natural areas recognized by either federal, state or local governments, or areas known as a habitat for flora or fauna.

4.2.2 Land Capability Overlays

Additional layers of information were also collected and categorized. This additional information was overlaid on the relevant land use categories listed in 4.2.1. This information was also organized to help evaluate the importance of various lands for preservation or the potential for development of any parcel of land. The overlay layers of the Land Capability Analysis process are as follows:

Environmentally-Sensitive Land (ESL)

Stream corridors, floodplains, wetlands, karst areas, aquifers, steep slopes (including the Kentucky River Palisades), mature woodlands, and natural or man-made bodies of water.

Aquifer Protection Area

A unique type of environmentally sensitive area, where use and development can directly affect the water quality of a major drinking water source.

Sewerable Areas

The Rural Service Area (RSA) was evaluated by the Urban County Division of Engineering to preliminarily determine the cost effectiveness of serving various rural areas by sanitary sewers in the future. The results distinguished lands that were sewerable from those that were appreciably more difficult to sewer. The Division of Engineering will be proceeding with a Rural Sanitary Sewer Feasibility Study for the RSA beginning in mid-2002. The study is expected to analyze these questions in more detail and make such determinations regarding feasibility of providing sanitary sewers. Data and conclusions from this study are important to the Purchase of Development Rights (PDR) evaluation system, as well as being critical to urban growth discussions that will occur during the preparation of the next Comprehensive Plan.

Interchange Access

Lands that have access to an arterial road and are within one mile of an interstate interchange.

Arterial Road Access

Lands that are within 2,000 feet of an identified rural arterial and have direct access to a rural arterial road.

Scenic Viewsheds

Lands that can normally be seen from scenic public roads in the RSA. Viewsheds were identified through interpretation of mapped features such as tree stands and hilltops or ridges, and were refined through field review and discussion with residents familiar with the areas.

Historic Landmarks and Areas

Areas on the National Register of Historic Places or recognized as historic sites or cemeteries.

Zoning

Areas outside the USA which are zoned other than Agricultural (A-U or A-R).

4.2.3 Application of the Land Capability Analysis

The products which resulted from this process are preserved in the files of the Division of Planning. Each of the layers is shown individually in large and small maps. The best summary depiction of this information is the set of four 2000' scale maps showing all the above layers, as well as the "General Use Map" of all land in the RSA. Pertinent details from this data gathering, interpretation and mapping effort were portrayed and discussed as a part of the *Rural Service Area Land Management Plan* adopted in April 1999.

As presented above, the Land Capability Analysis revealed the physical characteristics and land use interrelationships among various land uses in the RSA. This overlay process also revealed a strong correlation and association among prime soils, equine agriculture, and non-equine agriculture. The land capability maps were further analyzed in terms of possible land management strategies. This was done as part of the mapping key process discussed in the second step above. Its goal is to emphasize consistent management strategies for similar properties. That is, if two pieces of property had essentially the same characteristics, they would then have similar land management strategies proposed. This *Plan Update*, as a minor update, did not critically review the data, land use categories, and strategy determinations proposed here as part of the future land use decision making process. However, as the background and start-up efforts related to the *2006 Plan* begin, a careful analysis of the long-term land use needs of the community, based on the 2000 Census and new population projections, needs to be balanced with a careful review of the Land Capability Analysis data, products, decisions, and proposed strategies. This review needs to result in a process for incorporating this information into future land use decision making processes. The need for this type of process was also a recommendation of the adopted *Rural Service Area Land Management Plan*.

Those general Land Capability Strategies developed as a part of the Land Capability Analysis, and included in the *Rural Service Area Land Management Plan*, are as follows. These groupings and associations formed the preliminary strategic basis for the land categories suggested in the 1996 Siemon, Larsen and Marsh *Tentative Draft Plan*, and the sample alternative draft plan concepts contained the Division of Planning's 1998 *Rural Service Area Land Management Plan Report #2*:

1. Historic and environmental resource protection;
2. Equine preservation;
3. Agricultural conservation;
4. General rural preservation;
5. General rural development;
6. Urban/rural transition;
7. Strategic consideration; and
8. Potential urbanization.

Discussion of these general strategies helped set the direction of the *Rural Service Area Land Management Plan (RLMP)* and the criteria for selecting Purchase of Development Rights (PDR) parcels. Section 6.7 of this *2001 Plan Update* provides more detail on the adopted *Rural Service Area Land Management Plan* and the successful implementation of the *RLMP* through the PDR program.

4.3 GREENSPACE PLAN AND GREENWAY PLAN

4.3.1 Greenspace Plan (adopted 1994)

"The Bluegrass" is a phrase that conjures up beautiful images of the special region that Lexingtonians feel proud and privileged to call "home." Lexington-Fayette County is the heart of Bluegrass country, and the people who live and work here are stewards of a landscape of world renown. The *Greenspace Plan* translates these concerns for protecting the unique identity of the Bluegrass into recommendations for public and private action. The *Plan* sets a framework for county-wide and even regional greenspace considerations and has been further elaborated upon in more recent efforts, such as the *Rural Service Area Land Management Plan* and the draft *Greenway Master Plan*.

Greenspace - Bluegrass Heritage

The Bluegrass identity is what makes Lexington-Fayette County different from every other place in the world. "Greenspace" refers to the essential characteristics of the community that give the Bluegrass its special identity and quality of life. Greenspace is more than horse farms, parks and rock fences; it also encompasses natural environments, such as streams, sinkholes and the Kentucky River; valuable resources, such as prime soils; buildings that recall the community's founding and history; the experience of the city or countryside from an automobile; and the ability to travel safely by bicycle or on foot. The "greenspace system" refers to the rich fabric of these qualities woven together throughout the community, giving it a coherent identity.

Greenspace Benefits

The benefits of creating a comprehensive greenspace system go far beyond leisure and aesthetics. The benefits are fundamental to the future economy and quality of the environment of the community and the entire Bluegrass region. Protecting the remaining greenspace is not a luxury, it is a necessity for maintaining the quality of life that Bluegrass residents have always enjoyed and will continue to desire in the future.

General Greenspace Concepts

The three basic components of the greenspace system are listed below:

- Resources: Natural and cultural characteristics of the Bluegrass identity were mapped in the greenspace inventory and evaluated for greenspace protection.
- Sites: Particular locations and properties with significant Bluegrass resources that should be preserved and might be appropriate for public access.
- Linkages: Linear corridors, such as streams, roads and abandoned railroad rights-of-way that can create an interconnected greenspace system throughout the urban and rural area.

The *Greenspace Plan* proposes three levels of increased protection for greenspace lands:

Level 1: *Resource protection* would protect the majority of greenspace lands, especially in the rural area, where significant resources are on private property and no public access or public ownership is contemplated.

Level 2: *Visual access and protection* would preserve and enhance resources along designated road corridors and areas visible to the public.

Level 3: *Public parks and trails* would allow increased public access to greenspace. Property or easements would be acquired and owned by the public.

Designated Areas For Rural Resource Conservation Policies

Residents can no longer take for granted that the rural landscape will continue unchanged in the face of modern social and economic pressures. To maintain a healthy agricultural economy, the working agricultural landscape must be preserved intact - the soil, the water, the past investment in buildings, and the structure of the entire community. The *Greenspace Plan* identifies and maps two types of areas as a guide to match preservation policies and techniques to the significance of the Bluegrass rural resources in these areas.

- *Significant Rural Resource Concentrations* are specific locations scattered throughout the rural area where resources significant to the Bluegrass identity are clustered together, such as an historic building with a tree stand and rock fence, or a stream with steep slopes and sinkholes.
- *Increased Rural Resource Protection Areas* are large, consistent landscapes containing a greater density of Significant Rural Resource Concentrations. These rural areas have the greatest sensitivity to any development intrusion or change and need a greater level of protection than current land use regulations provide. Five such areas are identified and further emphasized in the *Rural Service Area Land Management Plan*.

Urban Greenspace Resources

Remaining natural areas and environmentally sensitive resources show the natural identity of predevelopment Lexington and provide open spaces and experiences of nature within the urban environment. Urban cultural resources convey Lexington's cultural identity and are a visible reminder of the city's development patterns and economic and social influences. These resources are proposed to be protected, reestablished, and made accessible within the greenspace system.

Greenspace Linkage System

The *Greenway Master Plan* is anticipated to be adopted by the Planning Commission in 2002 as an amendment to the *2001 Comprehensive Plan Update*. The *Greenway Master Plan* will recommend a linkage system consisting of natural areas, multi-use trails, and on-road bicycle facilities, a key recommendation of the *Greenspace Plan*.

Environmental linkage interconnects natural areas, parks and open spaces, which will support the healthy functioning of ecosystems and benefit urban development; improve water quality; provide wildlife habitat; control flooding and provide nature-oriented recreation.

Visual linkage will enhance Lexington's Bluegrass image and the visual experience of traveling on city streets. The *Greenspace Plan* recommends that studies and guidelines be put into place to retain the special qualities of our existing streets, and that the aesthetic features of developing properties be preserved during the design of new streets.

Recreational/commuting linkage will make it more feasible and attractive to travel within the city without relying on a car. Development of a comprehensive on-street and off-street bikeway/pedestrian system linking greenspace resources with homes, schools, parks and jobs is an organizing concept for the *Greenspace Plan*.

Prioritizing Greenspace

The many site and linkage opportunities proposed for the Greenspace system must be prioritized for implementation to help the Greenspace Commission and LFUCG make decisions about allocating resources, especially funding for property acquisition. The *Greenspace Plan* proposes a simple two-step checklist system that balances Greenspace values, which will be pursued over the long term, with short-term pragmatic concerns.

- **Values Checklist:** Each property receives a score based on its number of significant greenspace resources and functions.
- **Practical Checklist:** Properties are scored to reflect feasibility considerations, such as whether they are on the market, threatened by change, or have immediate funding opportunities.

Specific criteria have been written and adopted for evaluating potential purchases of development rights. It is anticipated that the *Greenway Master Plan* will further refine the prioritization of greenway properties. It is important that the LFUCG consider greenspace and greenways as an infrastructure element that the city must plan for in the capital improvement plan.

4.3.2 *Greenway Master Plan* Summary

In 2001, the Lexington-Fayette Urban County Government undertook a study to create a *Greenway Master Plan* to offer recommendations for protecting vital stream corridors throughout the urban and rural service areas, and to improve access to community resources close to where residents live and work. Environmental protection, floodplain management, establishment of open space corridors, and provision for recreational opportunities have long been the concerns of the community residents. The *Greenway Master Plan* will address these concerns and will provide detailed recommendations for establishing a greenway program.

The *Greenway Master Plan* is currently a work in progress, slated for adoption in 2002. It is being prepared for adoption as an amendment to the *2001 Comprehensive Plan Update*. It will also be an amendment to the *LFUCG Greenspace Plan*, adopted by the Greenspace and Planning Commissions in 1994. When adopted, the *Greenway Master Plan* will supercede those sections of the *1994 Greenspace Plan* that address greenways and related linkages. The plan will include detailed maps. A draft summary map is currently available for review. Past comprehensive plans have included proposed greenway designations as a land use plan overlay. Those designations have been refined and are part of this current *Plan Update*.

A multi-objective greenway system, incorporating streamside corridors and on-street facilities, can provide environmental protection, recreational opportunities, and better the economic health of the community. Greenways can benefit Lexington-Fayette County in the following ways:

- Greenways may offer alternative transportation opportunities through bicycle and pedestrian networks, thereby decreasing dependence on the automobile;
- Greenways have been shown to raise the value of the adjacent properties, and become amenities for residential neighborhoods;
- Greenways can enhance the tourism industry, an important part of any community's economy;
- Greenways may offer recreational activities that encourage more people to improve their health through such activities as walking, jogging, bicycling, and skating;
- Greenways may provide public access to important historical or cultural sites in a manner that promotes preservation and enhances interpretive opportunities;
- Greenways may preserve natural areas along streams. Often these areas are vegetated floodplains that absorb floodwater from stormwater runoff;
- Greenways may serve to improve the surface water quality of local streams. Natural areas along streams help filter pollutants before reaching the water;
- Greenways may improve the air quality by providing alternative transportation opportunities and by providing areas for tree preservation and reforestation; and
- Greenways provide essential habitat for many plant and animal species, thus promoting biodiversity. The greenways provide food and shelter and migratory corridors for terrestrial wildlife.

The *Greenway Master Plan* calls for a greenway system that is made up of four principal components: conservation corridors; primary, as well as secondary systems of trails; and a rural road bike route system, as described below.

Conservation Corridors

These corridors will constitute a major component of the *Greenway Master Plan* in the preservation or re-establishment of open space and riparian buffers along each identified stream or river. The effects of lost or fragmented riparian habitat can affect water quality, plant and wildlife habitat, and even increase stormwater runoff. With the new floodplain regulations, the city has essentially prohibited new development within the 100-year floodplain of any stream. However, the effects of previous development and loss of riparian corridors are evident throughout the Urban County, thereby reinforcing the need for conservation corridors. With a few minor exceptions, these corridors will not contain formal public access trails.

Based upon the *1994 Greenway Plan* and the *Expansion Area Master Plan*, the *1996 Plan* identified specific urban area greenway lands for potential dedication or conservation. The designated lands have been reviewed and refined in this *Update*. They may be further refined in the finalization of the *Greenway Master Plan*.

Primary Greenway Trail System

Primary trails provide the framework for regional connections to downtown Lexington, to major destinations, and to the neighboring counties. A total of 21 corridors have been identified as forming the primary greenway trail system. Primary trail corridors are located along major creeks, abandoned railroads, and urban and rural roadways. Primary trails link important destinations, create loop systems, provide opportunities for alternative transportation and provide recreation opportunities.

Secondary Greenway Trail System

The secondary greenway trail system provides supplementary connections between the primary trails. Secondary trails provide access to and from neighborhoods, regional and local destination points. The majority of the secondary trails are in the urban and suburban areas of the county. As such, many of the trails make use of existing roadways.

Rural Road Bike Route System

The rural road bike route system is proposed to provide connections for the internal bike route system (within the Urban Service Area) to specific destinations within the county and to potential destinations in surrounding counties. The rural road system supplements the primary trail system by providing important linkages between the major trails.

As noted earlier, the *Greenway Master Plan* is a work in progress, slated for adoption in 2002. At that time, this Section will be superceded by the adoption of the *Greenway Master Plan* as an amendment to this *Plan Update*. Production of the final Land Use Maps will be delayed in an effort to incorporate relevant map products from the *Greenway Master Plan*, assuming the *Greenway Master Plan* is adopted in a timely manner. As noted above, the *Master Plan* will be an amendment to this *Plan Update* and, upon adoption, it is incorporated in the *2001 Plan Update*, by this reference.

4.4 ENVIRONMENTAL QUALITY MANAGEMENT

Both development practices and environmental awareness have changed over the past twenty-five years. Some change has been brought about by legal mandates, as communities and laws change to reflect community standards and concerns (federal, state and local). A good example is the term "greenspace." Twenty-five years ago that term was in planning and environmental textbooks, but was not commonly utilized outside of the planning field. Today the term greenspace is widely recognized throughout the community, although it can have different meanings, depending upon which group is discussing "greenspace." Greenspace may relate to riparian habitat, stormwater management, and water quality issues, in addition to providing visual screening and recreational activities. As urban development becomes denser, the need for the preservation of natural features and open space becomes apparent. Implementation of new environmental regulations also impacts development practices.

Smart growth and environmental planning in the 21st Century in Lexington-Fayette County have evolved into a well organized review and input process for environmental concerns. The following includes issues or local policies and programs that impact development practices and proposals: the new engineering manuals and development guidelines; Royal Spring aquifer protection area; street design; subdivision layout; site design; quality of development; greenway planning and open space; urban forestry regulations; water supply protection; and water quality concerns. Many of these are currently addressed in the development ordinances and may be the responsibility of various LFUCG Divisions and Departments, coordinated by the planning process. Some of these topics/issues have local parallel planning efforts recently completed or in process.

4.4.1 Conservation Planning and Environmentally Smart Growth

Environmental planning and "smart growth" may utilize existing community resources in the development of special programs to achieve a common goal of environmental awareness. Environmental studies are expensive and, in many cases, time consuming. Community networking is the key to achieving a desired end. In many cases, networking various environmental programs and issues results in reduced costs and more efficient use of time and resources. Ecosystem management is a tool that allows innovative ideas to be voiced and developed. The following management tools have worked well in a number of projects in Fayette County over the past five or more years.

Evaluation and Management Tools

Any project has to have a technical planning stage to assess needs and conduct preliminary studies. Once these have been accomplished, it is necessary to analyze the situation and review options. Next comes the preparation and evaluation of recommendations, and finally the approval and adoption of the recommendation. In environmental planning it is necessary to have a community outreach process during the entire planning stage.

Community Networking

Environmental planning is a complex issue. One change that may seem rational today may create ecosystem changes that become undesirable in years to come. We have all been witness to "why did we do that years ago". The pooling of resources involving stakeholders, the technical community, and buy-in from the community at large is necessary to achieve success. This process may take a little longer in development, but the buy-in investment from the community in terms of support and community involvement in a specific project cannot be matched in the traditional way of past projects. Engineers, planners, accountants, biologists, etc., all look at a specific project with different thoughts and most likely with different outcomes. The environmental stewardship gained from a community project may last a lifetime.

Addressing Multiple Objectives

Often multiple agencies or jurisdictions have interest in the same topic or issue in a given community. When this is true, local efforts should be made to combine the planning work necessary to address these multiple objectives and to produce a single document or product that satisfies the needs of all

agencies. An example is a project that addressed the multiple objectives required by Federal, State and Local Regulations relating to Riparian Stream Management. With the reauthorization of the Federal Clean Water Act, Lexington applied for a Kentucky Pollution Discharge Elimination System (KPDES) Stormwater Discharge Permit. This was a requirement of the Commonwealth for waters within the jurisdiction of the Lexington-Fayette Urban County Government. This permit process required the LFUCG to implement a variety of structural and non-structural controls to protect the water quality of its streams.

The main objectives of the KPDES permit follow recommendations of the President's *Clean Water Action Plan* as outlined in the 1998 reauthorization. As a result of the permitting process, LFUCG will be focusing on Watershed Planning from an intra-governmental approach, as well as working with other stakeholders within Fayette County. The government will also be cooperating with regional water quality groups such as the Kentucky River Watershed Bluegrass Regional Working Group and other state and federal environmental agencies.

In addition to water resource protection through cooperative planning, the government intends to systematically restore as much riparian forests in floodplain areas as is feasible. "Reforest the Bluegrass" is a restoration project of riparian forest areas using volunteer help. It is an economically feasible way to use natural processes to return water quality and aquatic habitat. The planting of tree seedlings within an urban environment is highly visible and typically increases public support for water resource protection. Over the three years this program has been place (1999-2001), approximately 90,000 trees of various species were planted by 3,800 people. The first project was along Cane Run Creek on the former Coldstream Research Farm. In 2000 and 2001, mass tree planting occurred along a Town Branch tributary in Masterson Station Park and in Cardinal Run Park.

4.4.2 Best Management Practices

Best Management Practices (BMPs) cover a wide array of topics. There are BMPs for items as general as air and water quality, to ones as specific as best management practices for constructing infiltration basins. The LFUCG must recognize and utilize the BMPs for each area, as needed.

With the adoption of the Engineering Manuals, LFUCG has implemented the use of several BMPs that are associated with the engineering process. For instance, LFUCG has adopted the use of BMPs into our Zoning Ordinance concerning erosion and sediment control (Article 20).

The following page contains a partial list of some of the other efforts to protect the environment, as well as the water quality, of Fayette County. Additional BMPs recommended in the *Royal Spring Wellhead Protection Plan* are found in Section 4.4.3 of this Chapter.

Maintain Public Highways to Reduce Pollutant Runoff

- Sweep streets on a monthly basis (occurs for over 60 % of streets)
- Clean catch basins (occurs monthly for approximately 40 problem spots)
- Cover salt piles
- Reduce salt application through pre-wetting prior to a snowfall event

Maintain Public Rights-of-way to Reduce Non-point Source Pollution

- Manage pesticide & fertilizer use through certification of LFUCG applicators
- Control litter through Adopt-a-Spot, Glad Bag-A-Thon and downtown refuse pick-up
- Develop a no-mow policy along stream banks
- Develop and promote a yard waste collection program
- Prohibit and establish penalties for the disposal of litter or yard waste in any drains, sewers, or public waterways (see Article IV of the LFUCG Code of Ordinances)

Manage New Development/Redevelopment

- Require non-structural and structural controls BMPs for post-development, as well as during construction
- Enforce erosion control regulations and protection of environmentally sensitive areas contained therein (Division of Engineering responsibility)

Control Runoff From Landfills Through Approved Closure Plans

- Close the Old Frankfort Pike Landfill (recently approved by the Ky. Division of Waste Management)

Control Application Of Lawn Care Chemicals Through Public Education Campaigns

- Develop and promote an education program on the proper use and disposal of lawn chemicals (funding has been requested to develop a program utilizing commercial media)

Control Proper Disposal of Hazardous Materials

- Prohibit, investigate and prevent, contain and respond to spills & hazardous materials through the Division of Environmental & Emergency Management
- Report unauthorized or nonexempt hazardous materials (see Section 16A of the LFUCG Code of Ordinances)
- Detect, investigate and remove non-hazardous materials through the Division of Engineering
- Promote proper disposal of used toxins through household hazardous waste bi-annual collection days
- Collect used oil through an ongoing program sponsored by Valvoline Oil
- Limit seepage of sanitary sewers to storm sewers through sanitary sewer overflow reduction plan, costing $1.4 million annually
- Prohibit the discharge of sewage into any natural outlet (see Article V of the LFUCG Code of Ordinances)
- Inspect Underground Storage Tanks (UST) to enforce proper installation
- Prohibit and establish penalties for the discharging or dumping of anything other than stormwater into the public drainage system (Article 14 of the LFUCG Code of Ordinances)

Control Industry Related Discharges

- Identify potential contamination sources by watershed to determine the specific BMPs for the user

Regulate Construction Activities

- Review of site plans required by ordinances
- Require erosion control BMPs (by ordinance)
- Educate contractors and developers annually on BMPs and erosion control

Protect From Agricultural Runoff

- Require landowners of ten or more acres to develop an Agriculture Water Quality Plan using recommended BMPs (Agriculture Water Quality Act of 1994)
- Educate landowners in understanding the Agriculture Water Quality Act and in developing plans (ongoing and jointly sponsored by the Fayette County Conservation District and the Fayette County Extension Service)

4.4.3 Water Quality and Land Use Planning

Federal Water Quality Requirements

Water quality concerns throughout the nation in both urban and rural areas are, in many cases, a direct response to urban and rural development. Erosion is currently the number one water quality concern. Stream corridors and riparian habitat are modified or changed through development. Water quality and aquatic habitat are impacted by stream channelization; removal of tree cover (which impacts water temperature); water chemistry; and riparian vegetation and habitat changes resulting from erosion, siltation and point and non-point discharges. The Federal Clean Water Act requires each state to develop a Report to Congress (305b Report) on water quality every two years. Streams that do not meet the Clean Water Act standards for fishable and swimmable waters are listed in a 303d list for stream degradation. Most of the degradation issues come from problems with pollutants, such as nutrients, sediments and bacteria. Fayette County does have streams with impaired water quality (see Section 3.5.2).

Until recently, many states and communities chose to ignore the third part of the Clean Water Act. Due to environmental legal action in a number of states, communities are now required to develop and implement action plans to reduce the pollutant loads of the streams. Land use planning can have an impact on complying with this third requirement for cleaner water. Any stream listed in the 303d report is supposed to have a Total Maximum Daily Load (TMDL) study that is a management plan to reduce the pollutant load and to develop plans to reduce pollution in runoff that might be contributing to water quality problems.

Fayette County Water Supply Protection

Kentucky American Water Company (KAWC) maintains secure access to both of its water supplies. Jacobson Reservoir access is secure, since KAWC owns the reservoir and part of the watershed immediately adjacent to the reservoir. KAWC holds a water withdrawal permit from the Kentucky Division of Water (DOW) that allows for withdrawal from Jacobson Reservoir.

Access to the Kentucky River is secure, since KAWC owns the property where the intake is located. KAWC also holds a water withdrawal permit from the KYDOW that allows up to 60 million gallons per day (mgd) of withdrawal at the intake. The amount of withdrawal for the Kentucky River intake permit could be increased up to 80 mgd, per correspondence with the KYDOW. A second intake at the Kentucky River could be permitted to transfer water to Jacobson Reservoir in addition to the current intake, which is utilized to both transfer water and provide water at the Kentucky River Station.

The recommendations of the *Fayette County 20-Year Comprehensive Water Supply Plan* include the following:

- Due to their ecological value and proximity to KAWC's intake, areas of the Kentucky River and its tributaries at least one mile upstream of our water intake should be more effectively protected from contaminant dumping, discharges and spills, and from undesirable development.
- Protection of Jacobson Reservoir should be a community priority due to its role in water supply and recreation. Regulatory and non-regulatory programs should be undertaken to protect Jacobson Reservoir from eutrophication, siltation, and other contaminants. These could include designating a watershed protection area and/or establishing zoning as proposed in the Expansion Area Master Plan.

Other protection measures may include:

- Protective measures similar to those being required for groundwater recharge/wellhead protection areas should be required for surface water supply watershed protection areas on a statewide basis.
- Sections of Boone, Elk Lick and Raven Run Creeks may qualify for designation as special use waters, such as outstanding national resource water, state wild river, federal wild river, or federal scenic river. The streams should be studied by the Kentucky Division of Water and, if eligible, nominated for designation.
- Measures to protect the community's water supply (river and reservoirs) from persons intending harm is a new issue that needs to be considered in water supply planning efforts. This issue should be studied further for possible preventative actions.

Watershed Management

A watershed management approach has evolved over the past few years in the land planning process. The ultimate goal is to provide better protection and best management practices to streams in developed and developing areas of our community. Riparian forest restoration and/or preservation are evolving as a policy tool to prevent degradation of our surface and ground waters. The inter-governmental approach is working to make the community and government agencies more aware of the necessity of watershed protection.

This is being accomplished by a number of committees that have been set up to address various environmental concerns. The interaction of these committees helps to form a complete view of the environmental needs of our community. An Urban Forester has been hired to provide long range planning, which, in part, will deal with riparian reforestation. The following government agencies are now coordinating together on various environmental issues: Engineering, Planning, Building Inspection, the Greenspace Commission, the Stormwater Advisory Committee, the Environmental Commission, and the LFUCG Tree Board. Some of their accomplishments include:

- Adoption of a *Rural Land Management Plan* and its implementation tools
- Identification of stream corridors by the LFUCG Greenspace Commission
- Development of a *Greenway Master Plan* for the preservation of stream corridors to be adopted by the Planning Commission
- Reforestation (with 39,000 seedlings) of Cane Run Creek and plans for reforestation of a major Town Branch tributary (with 50,000 seedlings)
- Development of a Stormwater Manual (adopted January, 2001) that requires BMPs during and after construction

The LFUCG also has developed a number of working relationships with outside agencies to assist in development and planning issues. The government staff works regularly with NRCS, Royal Spring Planning Committee, Kentucky Geological Survey, Thoroughbred Resource Conservation & Development Council, Elkhorn Creek Consortium, and private consultants to help protect the waters of the Commonwealth.

Royal Spring Wellhead Protection Plan

Over the past five years, Fayette County, Scott County and the city of Georgetown have worked together to develop a program of wellhead protection for the Royal Spring Aquifer. The Royal Spring Wellhead Protection Committee, a joint effort between the city of Georgetown, Scott County, Fayette County and various state and federal participants, prepared a *Wellhead Protection Plan* for the entire watershed. This *Plan* has been adopted by the Lexington-Fayette County Planning Commission as an amendment to the *2001 Plan Update*. The Georgetown-Scott County Planning Commission has also adopted it. Because the *Wellhead Plan* is a top state priority and only limited copies of the full plan area are available (due to its length), this sub-section provides a thorough summary of the *Plan's* history and recommendations. The full *Plan* is incorporated by this reference.

This *Wellhead Plan* was, in part, a result of the fact that both counties have seen invigorating growth in the past twenty years, particularly since the announcement in 1986 that Toyota Motor Manufacturing Company was coming to Scott County. This has had indirect influence on growth in Fayette County and has also increased interstate travel on I-75/I-64, which bisects the aquifer.

Land use, both existing and future, forms a complex design issue, which has to be addressed for watershed management, both in terms of water quality and water quantity. The planning aspect for groundwater protection in this aquifer is unusual in that approximately eighty percent of the recharge area, the geographic area that contributes water to the aquifer, is located in Fayette County. Fayette County, though, does not receive any benefits from the Royal Spring Aquifer, except for perhaps a handful of agricultural wells in the aquifer in the County. The main water supply for Fayette County is the Kentucky River.

Groundwater is an important resource, both nationally and locally. It provides over ninety-five percent of rural Americans with a source of drinking water. Over fifty percent of Americans living in urban areas derive their water supply from underground water sources. Groundwater is also used for about half of the nation's agricultural needs and about one-third of its industrial needs. In the last twenty years, extremely rapid growth, in urban as well as rural areas, has begun to take a toll on our country's groundwater supplies. Because groundwater is extremely important to this growth, our nation has become sensitive to the contamination of our groundwater resources. Numerous incidents of groundwater contamination reinforce the need for this sensitivity, as well as protection of our water supplies at the Federal, State and local level. The Royal Spring Aquifer in Scott and Fayette County is no exception to the rule, as both communities have been charged with the protection of the aquifer's groundwater supply. The Georgetown Municipal Water System is the largest public water system in the state of Kentucky supplied by a spring. The Kentucky Division of Groundwater has named the Royal Spring Aquifer its number one priority for watershed protection.

The unique characteristics of the Royal Spring Aquifer make it a system that is highly susceptible to pollution. The Aquifer is located in karst topography in an irregular limestone region with sinkholes, underground streams and caverns. The gently undulating topography that typifies the Bluegrass landscape provides a direct access to the groundwater system via sinkholes and cavern passages for both surface water and pollutants. The underground streams and caverns also allow water and pollutants to travel quickly; i.e., a matter of hours from Lexington to Georgetown.

Prevention of groundwater pollution occurs only when citizens and local government are involved in identifying potential sources, understanding their role in pollution prevention, and taking steps to protect the environment. The *Royal Spring Wellhead Protection Plan* has been in the process of development for about five years. Geologic mapping of the spring, identification of possible hazards and the analysis of land uses have been ongoing. The result is a plan that utilizes communication and coordination between members of the Royal Spring Wellhead Protection Committee and the respective planning agencies, and develops best management practices for land uses that may have an impact on

the aquifer with development. Education of landowners in the aquifer is also a key to keeping our water clean. The goal is to access the potential for pollution to each developing parcel in the aquifer and to plan accordingly.

The 1986 amendment to the Safe Drinking Water Act requires states to adopt a Wellhead Protection Program (WHPP) to protect water supply wells and springs from contamination by management of potential contaminant sources within a designated land area around a well or spring. The Environmental Protection Agency (EPA) approved Kentucky's role in the Wellhead Protection Program in September 1993.

The Kentucky Wellhead Protection Program is coordinated by the Kentucky Department for Environmental Protection, Division of Water - Groundwater Branch, and is regulated through the Water Supply Regulations (401 KAR 4:220). The regulations require that counties assess the quality of water used by their public water supply systems and formulate protection plans for those systems.

The Royal Spring Wellhead Protection Committee met consistently between December 1995 and October 2001 to develop a working plan. The goals and objectives of the *Royal Spring Wellhead Protection Plan* are:

Goals:

- To provide a continual source of potable groundwater from the Royal Spring water system for Scott and Fayette County residents.
- To preserve the integrity of surface waters for the enjoyment of all.

Objectives:

- Implement effective planning and development processes that recognize significant water uses, protect the groundwater from excessive consumption and minimize erosion into surface waters.
- Encourage the use of best management practices that balance development and resource protection to prevent degradation of water quality.
- Develop regulations complementing but no more imposing than existing federal, state and local regulations to prevent contamination and to continually improve the quality of surface and ground waters.
- Provide opportunities for community education and involvement in groundwater and surface water preservation and protection.

The development of the groundwater protection plan must take into account a number of steps, including the inventory of potential sources of pollution and the development of management strategies to control contaminant sources.

The *Royal Spring Wellhead Protection Plan* considered the geographic setting, including current and proposed land uses; the potential for area groundwater contamination, including above-ground and underground storage of hazardous materials; and management of the Wellhead Protection Area, including an analysis of alternative strategies.

The development of the *Royal Spring Wellhead Protection Plan* is based upon both Fayette and Scott Counties' locally adopted comprehensive plans and planning standards. Existing and proposed land use types, both urban and rural in the aquifer protection area, were analyzed for pollution potential. Best management practices to contain or minimize pollution are proposed for each type of land use. It is the intention of this plan to develop guidelines for aquifer protection that can be incorporated into the planning process of all three political entities.

The following criteria were followed in the development of the *Wellhead Protection Plan*:

- Involve the public in the decision making process
- A consensus on this plan must be reached by the City of Georgetown, Scott County and Fayette County for the plan to be successful
- Determine if a specific type of development in the aquifer can result in the degradation of water quality
- Determine if specific portions of the aquifer are subject to existing pollution
- Determine whether specific portions of the aquifer should remain rural/agricultural in character
- Determine if the cost of restrictions, in terms of land use, would offset the significant economic, social, ecological, recreational and aesthetic benefits for the aquifer
- Determine if degradation of the aquifer would have significant economic, social, ecological, recreational and aesthetic costs for the Royal Spring Water Supply
- Provide for implementation measures that can be utilized by all three political units

During the planning process, a number of considerations were explored in the development of the *Wellhead Protection Plan* in regard to land use. These are:

- A determination of the existing aquifer recharge area
- Identification of the known existing and potential point & non-point sources of groundwater degradation
- Development of a mapped area, delineating the area of concern
- Development of a resource assessment method to be utilized in the determination of the amount and kind of development that can take place in the aquifer area
- Development of a comprehensive statement of land use management policy as it pertains to development in the aquifer recharge area
- Limiting the development of land that might have an impact on the water withdrawal capability for the Royal Spring Aquifer public water supply
- Proposal of limits on land uses that might have an adverse impact on water quality and/or recharge capabilities in the aquifer protection area
- Designation of specific areas in the aquifer recharge area that are suitable and appropriate for public acquisition
- Develop a program for local governmental implementation of this comprehensive management plan for the protection of the aquifer

The recommendations of the *Wellhead Protection Plan* primarily relate to Education and Best Management Practices (BMPs) with regard to land development to protect the aquifer. Land use planning will play a key

role in the combination of development and best management practices via BMP notes on development plans that have a potential for release of a hazardous product. This plan is not to preclude development, but rather to complement development with environmental safeguards to prevent a hazardous incident. Aquifer-wide considerations, from a broad perspective, are important and should be the context from which many resource-based land development decisions are made. Impacts resulting from stormwater-related input to the groundwater aquifer and stream baseflow might have serious and far-reaching consequences for aquifer recharge.

The following Best Management Practices (BMPs) are recommended in the adopted *Wellhead Protection Plan*:

- Post-development uncontrolled runoff rapidly increases and peaks out at a runoff rate level which is considerably higher than the peak rate of runoff for predevelopment.
- A conservation or natural approach to site design will be utilized, suggesting an array of non-structural conservation techniques.
- The use of vegetative swales and buffer strips can provide a significant water quality benefit, in addition to reducing the total volume of stormwater runoff.
- Conservation design approaches reflect a totally different philosophy toward site design, integrating stormwater into the very core of site design, as opposed to being considered an afterthought.
- There shall be trash/grating racks or other devices on storm sewer inlets to minimize potential for debris to enter the waterways.
- Pond/detention areas shall also have capability of treating "first flush" of stormwater from parking areas.
- Any underground storage tanks shall have active monitoring and secondary containment as mandated by all Federal, State and the Lexington-Fayette Urban County Government underground tank installation guidelines.
- For property located in the Royal Spring Aquifer Recharge Area, the developer will submit detailed design plans and written management plans for the control and containment of accidental spills or leakage, in hazardous materials storage areas and in the loading docks and transfer areas. These plans should be submitted to the appropriate County's Division of Environmental and Emergency Management for review and comment.

4.4.4 Floodplain Management Plan

Lexington-Fayette County has over 20 years of history in floodplain management planning and activities. Locally adopted floodplain regulations have exceeded Federal standards. Lexington-Fayette County has made major infrastructure improvements to local stormwater facilities. There have been numerous studies on stormwater in order to give the most accurate flooding information possible. These activities have been recently organized into a *Floodplain Management Plan*.

Lexington-Fayette County's *Floodplain Management Plan* will be used as a planning tool to guide development and prioritize our mitigation efforts. The *Floodplain Management Plan* was adopted by the Urban County Council in August, 2001 and was approved by FEMA prior to the October 1, 2001 deadline. To meet this deadline, the Divisions of Planning, Engineering, and Environmental & Emergency Management, State and Federal agencies, neighborhood representatives, local experts, and the residents of Lexington-Fayette County combined their efforts to create the *Floodplain Management Plan*. An advisory committee of concerned constituents was assembled to assess the hazards, set the objectives, and draft the Floodplain Management Plan.

The community has participated in the National Flood Insurance Program (NFIP) since its inception in 1973. Unknown to most property owners, homeowners' insurance policies do not cover flood damages and losses. The only way that flood insurance is available is through the NFIP. Lexington-Fayette County has also participated in an optional program under the NFIP called the Community Rating System (CRS) since its inception in 1990. Under the CRS program, communities gain points for flood prevention and mitigation activities. The more points this community receives, the lower the insurance premium cost for the residents of Lexington-Fayette County.

The topography of Lexington-Fayette County is unique for an urban area of its size, because the urban development does not have a major waterfront area. Lexington-Fayette County has 9 watersheds that generally flow away from the county. Small streams constitute the majority of the floodplains, with a small percentage of riverine floodplain along the Kentucky River. There are over 12,000 acres of floodplain in the county. Approximately 30% of those floodplains fall within the Urban Service Area Boundary. Because of the nature of our streams, Lexington-Fayette County does not have the classical flooding where houses and business are inundated with water. The County's flooding problems consist of backyard, basement, and street flooding. However, this does not diminish the fact that there are flooding problems that should be corrected and prevented where possible.

The advisory committee set 10 objectives for the *Floodplain Management Plan*:

1. To implement measures that permanently eliminate or reduce the long-term vulnerability of human health, property, and infrastructure to the natural hazards in Lexington-Fayette County.
2. Provide for citizen participation in floodplain management decisions and encourage citizen involvement in the implementation of programs for the benefit of the community.
3. The floodplain management plan must be consistent with Lexington-Fayette County's Comprehensive Plan, while promoting land use decisions which are sensitive to the natural and built environment.
4. Protect the streams and floodplains by preventing inappropriate development within these areas.
5. Develop mitigation measures to reduce flood vulnerability in existing developments.
6. Fulfill Lexington-Fayette County's need for greenways by using floodplain areas as passive greenspaces and multi-use trails.
7. Improve flood hazard identification and mapping in Lexington-Fayette County, while developing and maintaining a systematic program to identify flood hazards.
8. Develop mitigation plans and emergency operations procedures for critical facilities impacted by flood hazards.
9. Ensure consistent funding sources for prevention, maintenance, and mitigation of flood hazards.
10. Develop an effective flood warning system in Lexington-Fayette County.



4.4.5 Air Quality Planning

The impact that transportation planning has on the environment becomes more important with increased mobility and travel. Vehicles (or mobile sources) are a major source of urban air pollution. Though technology has and will continue to reduce vehicle pollution, people are driving more. There are more vehicles on the road and thus more miles driven than ever before. It is likely that these trends will continue. The following summarizes transportation planning's connection with air quality, air quality analysis, and the methodology used by the Lexington Area Metropolitan Planning Organization (MPO) and the Kentucky Transportation Cabinet (KYTC) to demonstrate conformity with air quality standards/goals established by the Clean Air Act Amendments of 1990.

As noted in Chapter 8, the Lexington Area Metropolitan Planning Organization (MPO) encompasses most of Fayette County and a portion of northern Jessamine County. This boundary is determined by Census data. In 1993, the MPO Policy Committee voted to expand the MPO planning boundary to include all of Fayette and Jessamine Counties because of the interrelationship of the county transportation networks and rapid growth in both counties. Additionally, in 1990, Fayette and Scott Counties were designated as a "non-attainment" air quality district for the pollutant ozone by the US Environmental Protection Agency (USEPA). The two-county area requires special air quality planning efforts to address air quality issues. In 1995, the two-county area was re-designated to "attainment" but was required to maintain air quality standards by showing conformity to the *State Implementation Plan* (SIP). In order to maintain the standard for ozone, the emissions of carbon monoxide (CO), ozone precursors including the group of hydrocarbons (HC) known as volatile organic compounds (VOC), and oxides of nitrogen (NOx) must be controlled and remain below emissions estimates from the SIP budget. In accordance with the 1990 Clean Air Act Amendments, Lexington Area MPO transportation projects, programs, and plans cannot contribute to violations of these standards.

A comprehensive air quality conformity determination analysis was conducted before the approval of the *FY 2002-2005 Transportation Improvement Program* (TIP) and the Lexington Area MPO's *Year 2025 Transportation Plan.* The *TIP* and *2025 Transportation Plan* include all regionally significant transportation projects and are "financially constrained." This means that transportation improvement projects are limited by the amount of funds that can be expected to be received for the MPO Area. The *SIP* does not identify any specific transportation control measures for the Lexington Area MPO.

The air quality conformity analysis involved two major elements:

1. The use of the MINUTP travel demand forecasting/simulation model software to determine vehicle miles of travel (VMT) by speed and road classification on the existing and proposed highway networks in the study area; and
2. The running of MOBILE5A emissions factor model software to determine HC, and NOx emissions.

In Fayette County, the socioeconomic model and the travel demand model were developed using the latest comprehensive planning and land use assumptions. These assumptions include land use, population, housing and employment data continually monitored and updated by the MPO staff. Socioeconomic data was developed for the *2025 Transportation Plan* using a "Density Saturation Gradient" Model[1] to predict growth levels within the MPO area. This data was used to prioritize and schedule projects throughout the planning period.

The timing of development is the product of several factors: property owner/developer initiative, the ability of government and the developer to provide needed infrastructure to serve development, and land availability. The current socioeconomic projections represent the best thinking and are based on the latest comprehensive planning and land use assumptions. The MPO will continue to monitor the rate of development of large growth areas, and will adjust socioeconomic data accordingly, to predict travel demand and emissions for subsequent transportation plan updates. If necessary, more regulatory transportation control measures can be considered if development rates exceed current projections.

Jessamine County vehicle miles of travel (VMT) were subtracted from the analysis data because only Fayette and Scott Counties comprise the designated air quality district. Scott County VMT were derived from the Kentucky Transportation Cabinet's travel demand modeling process. The Kentucky Transportation Cabinet took output from their model and added the Lexington Area MPO output to determine air quality conformity for the Fayette/ Scott County Air Quality District. For a more detailed explanation of this process, see *KYTC Sub-area Traffic Model for Scott County Kentucky, 2001*.

For a more detailed description of air quality planning methods and results in Fayette County, see the *2025 Transportation Plan*.

4.4.6 Urban Forestry Program

Forests are one of the most effective tools known to protect and maintain the natural environment. Urban trees can substantially reduce electrical costs in cooling buildings and help to reduce the "heat island" effect of cities, thereby reducing energy demand. Trees clean the air by removing noxious gases and particulates, such as dust and pollen. They absorb carbon dioxide, whose excessive buildup in the atmosphere may cause long-term increases in the earth's temperature. Trees along riparian areas slow and absorb surface runoff of stormwater and help control soil erosion. They provide food, nesting sites, and protection for birds and animals. Trees beautify neighborhoods and can add substantial value to residential property.

Since the *1996 Comprehensive Plan*, the Lexington-Fayette Urban County Government has created an Urban Forestry position and program to develop better standards to protect and enhance the urban forest in the County. The development of Tree Protection Standards in Article 26 of the *Zoning Ordinance* includes requirements for tree protection areas, tree protection plans, and trees in stream and riparian zones. This Article establishes the standards and procedures for county-wide tree protection and planting in new developments.

The quality of Lexington's urban forests, especially in the older sections of Lexington in the rights-of-way, is an issue being addressed by the Urban Forester. Many of the urban-forested areas were planted in the 1930s and, as a result, are now in a state of tree decline due to age. Pilot projects have been initiated to address some of the maintenance and tree removal needs. The Urban Forester also oversees private and public street tree maintenance decisions. Additionally, a Street Tree Scoping Study, assessing the distribution and condition of existing street trees, and proposing alternative future tree management studies, is underway.

[1] See *2025 Transportation Plan*, Chapter 4, Socio-Economic Data

New tree planting is ongoing in the community through the Corridors Committee planning efforts for corridor enhancement, and through the "Reforest the Bluegrass" projects for planting in riparian zones.

The city should further develop an urban forestry management and development program. The program should conserve the existing urban forest to the greatest extent possible and develop a plan for its ultimate development, more specifically as follows:

- Develop an overall tree maintenance, replacement, and planting program for the city for public lands;
- Plant and encourage planting of street trees, particularly along existing collector streets currently without trees and with sufficient planting space;
- Develop a tree protection program in the review of proposed development that contributes to the overall canopy goals of the city;
- Create an ongoing inventory of all trees on public lands and develop a management plan to achieve a maximum forest canopy; and
- Develop a public education program promoting the benefits of trees and their care and maintenance.

4.4.7 Scenic Resources

The rural character of the Bluegrass region, especially with the prevalent equine industry, imparts a unique visual quality that has given impetus to many of the planning regulations in place in Fayette County today. One of the dangers with time is the ever-increasing disappearance of the small and large images that help to shape the community. As development occurs, we tend to become commonplace USA. It is important to keep the perspective of what makes us unique in a world-class scenic vista arena. Some important scenic resources worthy of planning consideration and protection include the following:

- View sheds (scenic horse farms, rural roads, scenic vistas)
- Scenic and Historic Byways
- Nature Preserves, Sanctuaries, Reservoirs
- Kentucky River Palisades
- Stone Fences

It is the inter-relationship of many of the above that helps to create Fayette County's unique scenic resources. Tourism is a strong industry in Fayette County, and much of it relies upon these scenic resources. View sheds can be especially difficult to define and preserve. It is hoped that the new Purchase of Development Rights program will be instrumental in the preservation of our rural areas and related view sheds. The preservation of scenic and historic byways is critical to maintaining the existing charm and character of the rural areas. Road widening, tree decline and stone fence destruction or degradation take their toll on the rural view shed.

Other scenic resources, such as nature preserves, sanctuaries and the reservoir/Jacobson Park are also important to support and maintain. These types of areas serve as educational and recreational areas for the community. As Fayette County's population ages, the importance of passive recreation will increase. Unless funding is found for purchase, or extension of lease, the park at Jacobson Reservoir may be at risk. The Kentucky River Palisades provide a spectacular view of the River. The Palisades and the river itself are important resources that are under-utilized by the general public. Public access to Pool Number 9 on the Kentucky River should be pursued. The stone fences that are found adjacent to the rural road public rights-of-way and on private lands need continued preservation and enhancement efforts. The *Stone Wall Preservation Ordinance* and the Dry Stone Wall Conservancy have helped to maintain and enhance our stone fences. More educational programs and funding are necessary for protection of stone fences on public rights-of-way. Consideration of protection for stone fences located on private property should also be investigated.

4.4.8 Maintaining the Existing Natural and Cultural Environment During Development

The term "Smart Growth" again comes into play. Development in Fayette County over the past twenty-five years occurred on land with few physical restrictions. Possibly the biggest challenge to future development within the Urban Service Area will be the management and development of land with steeper slopes and more frequent streams and springs. Rigid ideas and existing methods for infrastructure development may have to be modified. Areas of development in steep slope areas tend to have poor, thin soils and may require greater fill areas if they are disturbed. Thin soils and, thus, the resulting bedrock, give way to harder placement of utility services and stability problems with slope. This, in turn, may result in soil creep problems. With a higher density of development on or near wet weather springs, a result can be more wet basements, as well as foundation problems for those with excessive wetness.

Land Subdivision Regulations do require specific site planning in areas of steep slope, as well as in other environmentally sensitive and geologic hazard areas. However, existing ordinances may require greater attention to ensure that future development does not have additional environmental problems compounded by development. It would be prudent in the future for the land developer to have a better assessment of the existing land to address problems.

Regulations regarding placement of fill and excessive slope should be monitored; and development of land with a slope of over 15% should occur only with extreme caution. Springs and similar potential problems also need to be reviewed and may need to be recorded more clearly during the development planning process. Steep slope and potential erosion sites should also be monitored more carefully where small lots are proposed, as such lots make these problems more difficult to correct in the future.

Detention/retention basins were often designed into private lots; and, in some cases, form a major portion of a back yard or even front yard. In the future, land devoted to detention/retention basins should be evaluated, and ownership should be the responsibility of a homeowner association or the government. The problems associated with basin upkeep and siltation creates too many problems for the individual homeowner.

Development plans and subdivision plats should preserve landforms and follow the contours of the land. Every effort should be made to preserve such valuable environmental features as tree stands, stone fences, and historic buildings. Techniques for environmental preservation should be tied more closely with open space, greenspace, and greenway requirements. Existing street design and construction standards should be applied with appropriate flexibility and sound judgment to retain important features of the existing environment, while meeting health and safety requirements. If scenic and natural amenities must be lost during development, some replacement of equivalent value should be required. The development, preservation and dedication of greenways and riparian areas will become more important in future development, as flooding issues and water quality assessment issues from development become more apparent.